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Quebec-Maine Interconnect Project Description

INTRODUCTION

Central Maine Power Company (CMP) proposes to construct the "Quebec Maine Interconnect" (QMI), a High Voltage Direct Current (HVDC) transmission line and related facilities capable of delivering up to 1,200 MW of electric generation from Quebec to the New England Control Area in response to the Request for Proposals for Long-Term Contracts for Clean Energy Projects dated March 31, 2017 issued by the Massachusetts Department of Energy Resources and the Electric Distribution Companies of Massachusetts[1] (the "Massachusetts RFP").

The Massachusetts RFP seeks proposals for long term contracts for annual deliveries of up to 9,450,000 MWh of Clean Energy Generation and related transmission starting by at least 2022, pursuant to Section 83D of Chapter 169 of the Acts of 2008 (the "Massachusetts Green Communities Act"), as amended by chapter 188 of the Acts of 2016, An Act to Promote Energy Diversity (the "Massachusetts Energy Diversity Act").[2] The Massachusetts RFP defines "Clean Energy Generation" as "(i) firm service hydroelectric generation from hydroelectric generation alone; (ii) new Class I Renewable Portfolio Standard ("RPS") eligible resources that are firmed up with firm service hydroelectric generation; or (iii) new Class I RPS eligible resources."[3]

The QMI is designed to provide a cost-effective and environmentally friendly transmission path to deliver the Clean Energy Generation sought by the Massachusetts RFP from Quebec-based sources and, in fact, the project will be capable of delivering the entire annual quantity of clean energy sought by Massachusetts. CMP is currently in discussions with several Clean Energy Generation developers in Quebec in order to determine the optimal supplier(s) to make use of the QMI transmission capacity as part of one or more joint bids in response the Massachusetts RFP. On July 27, 2017, CMP will propose the QMI as part of such bid(s) in conjunction with proposals for Clean Energy Generation from one or more of these Clean Energy Generation developers.

The use of the QMI for delivery of up to 9,450,000 MWh of Clean Energy Generation will provide many significant benefits to Maine and the rest of New England. In particular, the delivery of Quebec-sourced Clean Energy Generation is expected to reduce greenhouse gas emissions from fossil-fuel fired thermal generation in New England, enhance electric reliability, particularly

[1] Fitchburg Gas & Electric Light Company d/b/a Unitil ("Unitil"), Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid ("National Grid"), NSTAR Electric Company and Western Massachusetts Electric Company d/b/a Eversource ("Eversource").

[2] The Massachusetts Energy Diversity Act is available at https://malegislature.gov/Laws/SessionLaws/Acts/2016/Chapter188.

[3] Massachusetts RFP at A, available at https://macleanenergy.files.wordpress.com/2017/03/83d-rfp-and-appendices-final.pdf.

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during winter months when natural gas supply constraints have occurred in recent years, and reduce the wholesale cost of electricity for the benefit of retail customers across the region.

PROJECT COMPONENTS

The proposed QMI Project is composed of the following components:

- one (1) 148-mile 1,200 MW capable HVDC transmission line;
- one (1) DC to AC Converter Station and associated +/- 0.9 mile 345kV transmission line;
- one (1) STATCOM substation and associated +/- 0.25 mile 345kV transmission line;
- one (1) 27-mile 345kV Transmission Line;
- two (2) 115kV Transmission Line Rebuilds; and,
- Additional equipment installation and upgrades at Larrabee Road Substation (Lewiston), Surowiec Substation (Pownal), Coopers Mills Substation (Windsor), and Maine Yankee Substation (Wiscasset).

A more detailed description of each project component and a project overview map is provided below.

HVDC TRANSMISSION LINE

A new 148-mile HVDC transmission line from Beattie Township on the Canadian Border to Merrill Road in Lewiston. A portion of the new HVDC line, from Beattie Township to the Forks (approximately 53.6 miles), will be located within a previously undeveloped, 300-foot-wide transmission line corridor. From the Forks to Wyman Hydropower Station in Moscow the new line will be located within an existing, partially developed 300-foot-wide transmission line corridor (Section 222, approximately 21.9 miles). The new line from Wyman Hydropower Station in Moscow to a new DC to AC Converter Station in Lewiston will be located within an existing, partially developed 400-foot wide transmission line corridor (Sections 63, 278 and 200, approximately 71.5 miles).

The installation of the new HVDC transmission line will also require a 300-foot widening of the existing 400-foot transmission line corridor near Bowman Field Flying Club in Livermore Falls (Section 200, approximately 1 mile) to accommodate the glide slope for planes landing at the airfield.

DC TO AC CONVERTER STATION

The Converter Station is proposed to be sited north of Merrill Road in Lewiston and will occupy approximately 7 acres. A new, approximately 0.9-mile 345kV transmission line within an existing, partially developed 400-foot wide transmission line corridor (Section 200) will be required to connect the Converter Station with the Larrabee Road Substation.

FICKETT ROAD SUBSTATION

The QMI includes the construction of a new substation facility on approximately 6.12 acres adjacent to Fickett Road in Pownal, which will involve the installation of a 345kV +/200MVAR STATCOM, a new 345kV transmission line from Surowiec Substation (approximately 0.25 miles), the installation of three (3) 345kV 100MVAR Capacitor Banks, and related bus and site work.

345KV TRANSMISSION LINE

A new 345kV transmission line is proposed to be constructed within the existing 270-foot-wide transmission line corridor, to be widened to 550 feet, from Coopers Mills Substation in Windsor to Maine Yankee Substation in Wiscasset (Sections 392, 81 and 377, approximately 27 miles).

SECTION 62 AND SECTION 64 115KV REBUILDS

The QMI will also require the rebuilding of the existing Section 64 115kV transmission line between Larrabee Road Substation in Lewiston and Surowiec Substation in Pownal (approximately 16.1 miles), and the rebuilding of the existing Section 62 115kV transmission line between Crowley's Substation in Lewiston and Surowiec Substation in Pownal (approximately 9.3 miles). As determined by interconnection studies, the rebuilds will be constructed in a single pole configuration with new conductor rated at a higher thermal capacity to address thermal overload conditions that could result in the event of a line loss on transmission line Section 3026 between Larrabee Road Substation and Surowiec Substation.

SUBSTATION MODIFICATIONS AND UPGRADES

Modifications to existing substations at Coopers Mills Road in Windsor, Larrabee Road Substation in Lewiston, Maine Yankee Substation in Wiscasset, and Surowiec Substation in Pownal will be required. None of the following modifications will necessitate yard expansions.

<u>Coopers Mills Substation</u>

Modifications will include 345kV bus work and circuit breaker installations to reposition the existing Larrabee Road Substation and Maine Yankee Substation 345kV transmission lines, and the addition of a terminal for the new 345kV transmission line to Maine Yankee Substation.

<u>Larrabee Road Substation</u>

Modifications will include the addition of a terminal for the new 345kV transmission line from the proposed Merrill Road Converter Station, the addition of new dead-end A-frame structures, and the addition of a new 345kV circuit breaker.

<u>Maine Yankee Substation</u>

Modifications will include upgrading the existing 345kV bus arrangement to breaker and a half configuration by the addition of a 345 kV three-circuit breaker bay, the relocation of the existing Coopers Mills 345kV line, the addition of a terminal for the new 345kV line from Coopers Mills Substation, and the repositioning of the existing 345kV line from Surowiec Substation in Pownal.

Surowiec Substation

Modifications will include the addition of a terminal for the new 345kV transmission line from the proposed Fickett Road Substation in Pownal, the addition of a new dead-end A-frame structure, and the addition of a new 345kV circuit breaker.

Lowelltown Twp
Beattie Twp
Appleton Twp
T5 R7 BKP WKR
Bradstreet Twp
Parlin Pond Twp
Johnson Mountain Twp
Skinner Twp
Hobbstown Twp
West Forks Plt
Moxie Gore
The Forks Plt
Caratunk
Bald Mountain Twp T2 R3
Moscow
Wyman Hydro
Concord Twp
Embden
Anson
Industry
Starks
Farmington
New Sharon
Wilton
Chesterville
Jay
Livermore Falls
Leeds
Greene
Larrabee Road
Converter Station
Lewiston
Auburn
Crowleys
Fickett Road
Durham
Surowiec
Pownal
Windsor
Coopers Mills
Whitefield
Alna
Wiscasset
Woolwich
Maine Yankee
SOMERSET CO
FRANKLIN CO
PISCATAQUIS CO
KENNEBEC CO
OXFORD CO
CUMBERLAND CO
LINCOLN CO
MAINE

Quebec
New Brunswick
Montreal
Maine

Legend

- HVDC (New ROW)
- HVDC (Existing ROW)
- New 345 kV Line
- Rebuild Sections
- Existing Substation
- Proposed Substation

10 Miles

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Overview Map

AVANGRID

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